Course Overview:
This one-credit course uses health occupations as a vehicle to present the life science content outlined in the *Program of Studies*. The course is interdisciplinary in nature and integrates academic expectations and activities with the disciplines of life science, mathematics, health, social studies, language arts, arts and humanities, and vocational studies. During their study of medical science, students will gain an understanding of the normal structure and function of the human body through scientific inquiry. Life science conceptual understandings, applications, and connections make this science relevant to students. Anatomy, physiology, physics, and chemistry concepts are reinforced with real-life analogies and health-related examples are used to illustrate potentially difficult scientific concepts.

Models are organized around guiding questions. Guiding questions (in bold print) direct teachers' choices of activities and are the questions students should be able to answer at the end of the course. Essential questions may be included to further focus student learning.

Pages of models are arranged in pairs. On the left-hand page of each pair are guiding and essential questions along with related academic expectations and correlations to the *Program of Studies* and medical science content chart. Sample activities and sample extensions for diverse learners are found on the right-hand page. While sample activities address content or content from elective areas, they are not intended to be comprehensive. Teachers still are responsible for planning instruction to meet the diverse needs of all their students.

Guiding and Essential Questions:
How do cell structure, function, and processes affect living things?
- What disease processes result from changes in my body's cell structure and functions?

What is the molecular basis of heredity?
- How do errors in decoding and transmission of genetic traits affect my health?

What are the processes of biological change?
- How does aging affect the functioning of my body systems?
- How does the function of microorganisms in my world affect me?

How are organisms within ecosystems interdependent?
- What is my role in the cycling of matter and the flow of energy through ecosystems?
- What is my role in an ecosystem?
- How are chemical reactions responsible for the maintenance, growth, and development of my body?

How do body systems work together to keep me healthy and active?
- How does my body maintain homeostasis?

Why do organisms behave the way they do?
- How does my environment affect my behavior?
- What factors determine my marital status and the size of my family?

Why is a knowledge of chemistry and physics necessary in medical careers?

- How will participation in student organizations help prepare me for a career in health care?

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**How do cell structure, function, and processes affect living things?** What disease processes result from changes in my body's cell structure and functions?	**Students will** **Life Science** • investigate cell structures and their functions. • investigate cell regulation, differentiation, and how the process of photosynthesis provides a vital connection between the Sun and energy needs of living systems. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use equipment, tools, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • examine the interaction between science and technology. • explore the impact of science on personal and community health. • analyze how science and technology are necessary for solving issues. • recognize that scientific knowledge is subject to change. • investigate advances that have effects on science and society. **Medical Science Content Chart** • identify and analyze human body systems and the ways their components work together or affect each other. • classify major disease processes affecting each body system. • relate medical terminology to body organs and systems. • investigate radioisotopes in the treatment and diagnosis of disease.

Sample Activities	Sample Extensions for Diverse Learners
Students will • create cell models, using nontoxic, biodegradable materials, to illustrate appearance and position of various organelles within cells. Produce keys that include descriptions of organelle functions. • trace path of molecules (e.g., glucose, water) as they arrive at cell membranes and move through cells. Create bulletin boards demonstrating movement. • examine slides of various cell types from multicellular organisms. Discuss relationships between structure of different cell types and their functions. Determine what structure and functions all cells have in common. • compare functions of cell organelles to school or city structures that have similar functions. Create multimedia presentations showing comparisons. • research common diseases (e.g., cancer, influenza, diabetes, cystic fibrosis). Trace disease processes to changes in organ systems or cells. Develop informational brochures that describe diseases and changes they cause at the cellular and organ levels. Distribute brochures through county health departments. • investigate how and when cells differentiate. Read "How Does a Single Cell Become a Whole Body." Trace formation of germ layers and identify organ systems that develop from each layer. Create informational bulletin boards, collages or posters. Examine drugs (e.g., thalidomide, alcohol) and diseases (e.g., rubella) that interfere with differentiation and organogenesis. Explain U.S. governments' recommendation that pregnant women abstain from drinking alcohol. Write articles to encourage pregnant women not to drink. *Use this activity to develop possible writing portfolio entries (WP - Transactive).* • investigate organ systems (e.g., respiratory, digestive). Work in small groups to create physical models of systems. Research major diseases of each body system and methods used to diagnose and treat diseases (e.g., radioisotopes, surgery, drugs). Analyze how breakdown or disease in one system affects others. ***Technology suggestions:*** *Use Internet to conduct research. Create multimedia presentations for peers describing structure, function, and major diseases of each system.*	Bill has difficulty expressing concepts in written form, but works well with manipulatives. Provide Bill various materials to create cell models. Models may be patterned on easily recognizable pictures *(Types of extensions: resources and materials, demonstration of knowledge).* Alicia has difficulty understanding complex words or directions. Provide her with picture cards to introduce new vocabulary and limit directions to three steps at a time. Alicia will need additional time to complete assignment *(Types of extensions: resources and materials, complexity).* Cameron, Bart, Amanda and Alicia need opportunities to research and apply advanced level findings to real problems (e.g., they need to practice good listening skills). These students will prepare and participate in formal debates on whether the U.S. government should recommend that pregnant women abstain from drinking alcohol (or using other substances which interfere with differentiation and organogenesis). The teacher may stipulate that students will not know whether they represent affirmative or negative sides until day before debate *(Types of extensions: purpose and appropriateness, complexity, time, resources and materials, procedures and routines, demonstration of knowledge).*

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**What is the molecular basis of heredity?** How do errors in decoding and transmission of genetic traits affect my health?	**Students will** **Life Science** • investigate DNA. • investigate encoding and replication. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use equipment, tools, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • apply scientific inquiry and conceptual understandings to solving problems of technological design. • examine the interaction between science and technology. • explore the impact of science on personal and community health. • use science to investigate hazards. • analyze how science and technology are necessary for solving issues. • analyze the role science plays in everyday life and compare different careers in science. • recognize that scientific knowledge is subject to change. • investigate advances that have effects on science and society. **Medical Science Content Chart** • relate radioisotopes to the treatment and diagnosis of disease. • apply mathematics, science and communication skills to technical content.

Sample Activities	Sample Extensions for Diverse Learners
Students will • create and use models to illustrate DNA structure, replication, and protein synthesis. Investigate mutation by substituting DNA bases. Using models, demonstrate how changes in DNA affect structure of proteins and cause genetic disorders. Develop informational brochures on genetic disorders describing diseases, their inheritance patterns, and community resources for interested families. Distribute brochures through Youth Services Centers (*WP - Transactive).*	
• compare observed and expected outcomes of genetic crosses using both Punnett squares and basic probability. Create pedigree charts for observable genetic traits (e.g., tongue rolling, widow's peak, hitchhiker's thumb) or disorders. Include at least three generations. Use information from families, acquaintances, or history (e.g., hemophilia in descendants of Queen Victoria) to create charts. Role-play genetic counselors. Conduct mock counseling sessions for couples with histories of genetic problems. ***Technology suggestions:*** *Use Internet to conduct research. As alternative to brochures, students could develop multimedia presentations.*	Moses and Molly are two students in the gifted and talented program. They have demonstrated mastery with many basic biology concepts. They should be provided opportunities to shadow genetic counselors *(Types of extensions: purpose and appropriateness, motivation).*
• investigate factors (e.g., radiation) that alter DNA. Research effects of radiation on Japanese after the bombing of Hiroshima and Nagasaki. Read *Hiroshima* and discuss impacts of bombing on individuals and Japanese society. Correspond with survivors and their families about problems they still face. ***Technology suggestion:*** *Communicate with survivors via e-mail.*	Lum is an avid reader and history enthusiast. He has extensive knowledge of events surrounding WWII in the South Pacific. Allow him to select projects that will extend his knowledge *(Types of extensions: participation, pace).*
• research ways radiation can be used to diagnose and treat diseases. Shadow radiation technologists at local healthcare facilities. Create brochures on medical uses of radiation for distribution at	

healthcare facilities *(WP-Transactive*).	

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**What are the processes of biological change?** How does aging affect the functioning of my body systems? How does the function of microorganisms in my world affect me?	**Students will** **Life Science** • examine how species change over time. • examine diversity and classification. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use tools, equipment, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • apply scientific inquiry and conceptual understandings to solving problems of technological design. • examine the interaction between science and technology. • explore the impact of science on personal and community health. • recognize how science influences human population growth. • investigate how science can be used to solve environmental quality problems. • use science to investigate hazards. • analyze how science and technology are necessary for solving issues. • recognize that scientific knowledge is subject to change. • investigate advances that have effects on science and society. **Medical Science Content Chart** • relate medical terminology to body organs and systems.

Sample Activities	Sample Extensions for Diverse Learners
Students will • research and summarize theories about origin of life. Survey community members to determine their beliefs. Read articles and literature (e.g., *Summer for the Gods*) regarding the teaching of evolution. Collect data and create bar graphs, showing differences among groups (e.g., male, female, African Americans, American Indian). Write personal essay describing their own beliefs. Debate issues related to different theories. Write editorials for school newspapers supporting beliefs on the teaching of evolution *(WP - Transactive).*	
• research news and magazine articles that document microorganisms' resistance to drugs (e.g., antibiotics). Investigate difficulties researchers have in developing vaccines for diseases (e.g., HIV, malaria, common cold, influenza). Interview doctors and pharmacists on proper use of antibiotics. Create flyers or posters to display in drugstores.	Jay and Rhonda enjoy research and are interested in genetics. They work better in small groups and require reinforcement. Rules for group conduct and expectations should be posted and reinforcements provided *(Types of extensions: motivation, procedures and routines).*
• research frequency of genetic disorders (e.g., sickle-cell anemia in African Americans, cystic fibrosis in Caucasians, methemoglobinemia in Eastern Kentuckians) prevalent in different segments of human population. Create graphs comparing county, state, and national data. Identify factors responsible for prevalence of these disorders within different segments of population. Research cause and inheritance patterns of these disorders and medical tests used to identify genetic disorders in newborns. Create public service announcements for local radio or television stations to increase community knowledge of these disorders. Use Internet to conduct research. See The Nation's Prevention Agency Center for Disease Control. http://www.cdc.gov/default.htm See Center for Disease Control and Prevention: Health Information http://www.cdc.gov/diseases/diseases.html	Since her accident, Jimmie Dee needs additional time to complete assignments. She will do an in-depth study of one organism, using visual aids and posters with steps outlined
• investigate potential causes of changes in human gene pool. Debate how modern technologies (e.g., expensive medical treatments, genetic engineering, genetic testing) and lifestyles affect human gene pool.	
• observe microorganisms (e.g. bacteria,	

dinoflagellates, protozoans). Investigate beneficial and detrimental roles microorganisms play in environment (e.g., fermentation, food spoilage, diseases, decay, bioluminescence, food digestive processes, production of vitamins and antibiotics, nitrogen fixation). Create illustrated children's books describing microorganisms and their roles *(WP - Transactive).*	*(Types of extensions: complexity, time, magnitude, environment).*

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**How are organisms within ecosystems interdependent?** What is my role in the cycling of matter and the flow of energy through ecosystems?	**Students will** **Life Science** • investigate the cycle of atoms and molecules within the biosphere. • analyze energy flow through ecosystems. • analyze the flow of matter and energy. • investigate behavioral responses. • explore how human activities alter ecosystems. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use tools, equipment, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • examine the interaction between science and technology. • explore the impact of science on personal and community health. • analyze the role science plays in everyday life and compare different careers in science. • investigate advances that have effects on science and society. • use science to analyze the use of natural resources. **Medical Science Content Chart** • relate importance of chemistry and physics to students

		studying the health professions and to various body processes.

Sample Activities	Sample Extensions for Diverse Learners
Students will • investigate relative abundance of carbon, hydrogen, nitrogen, and oxygen in living things. Identify major compounds found in living things (e.g., CO_2, H_2O, proteins, carbohydrates). Trace movement of these elements between living and nonliving world. Identify critical processes (e.g. respiration, photosynthesis, bacterial role in nitrogen cycle) to each cycle. Assume role of elements or molecules as they cycle through the biosphere. (Element or molecule must pass through at least two organisms.) Develop skits and present to class. ***Technology suggestion:*** *Use camcorders to videotape skits.*	
• design food chains showing humans' position as primary and secondary consumers. Use food chains to construct food webs. Analyze humans' position in energy transfer. Compare vegetarian and non-vegetarian diets to determine effects of each on the environment. Determine ingredients needed to produce a cow, including land, forage, fuel, fertilizers, corn, soybeans, insecticides, herbicides, antibiotics, hormones, and water. *W*rite newspaper editorials explaining the distribution and use of resources among nations of the world *(WP - Transactive).* • research methods used to determine number of calories in foods. Determine number of calories in walnuts by burning the walnuts beneath test tubes filled with water. Compare water temperature before and after burning. Compare number of calories released by lipids, proteins, and carbohydrates. Write informational articles for dieters explaining which type of food provides the most calories and why (*WP-Transactive*). • investigate mechanisms for heat gain and loss in humans. Research malfunctions in human thermoregulatory system (e.g., heat exhaustion, heat stroke) and use of induced hypothermia during surgery. Design activities to compare effects of physical activity and external environmental stimuli (e.g., temperature, layer of clothing) on regulation of body temperature. Create graphs to illustrate results. ***Technology suggestions:*** *Use computer-based laboratory equipment to collect data and create graphs.*	Ann has scored well on a pretest of biology topics. She should be allowed to be a peer tutor for other students in the class and select her own research project. Ann will work with ecologists at the local university research farms to investigate populations of grasses. *(Types of extensions: participation, order of learning, level of support).*

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**How are organisms within ecosystems interdependent?** What is my role in an ecosystem? How are chemical reactions responsible for the maintenance, growth, and development of my body?	**Students will** **Life Science** • examine the factors that influence the interactions between organisms. • recognize that living systems require energy. • investigate photosynthesis, cellular respiration, and energy. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use tools, equipment, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • apply scientific inquiry and conceptual understandings to solving problems of technological design. • explore the impact of science on personal and community health. • recognize how science influences human population growth. • investigate how science can be used to solve environmental quality problems. • use science to investigate hazards. • analyze how science and technology are necessary for solving issues. **Medical Science Content Chart** • relate importance of chemistry and physics to students studying various body processes and the health professions. • identify and analyze human body systems and how their components work together or affect

		each other.

Sample Activities	Sample Extensions for Diverse Learners
Students will • design self-contained ecosystems that support six people. List organisms required to keep ecosystems functioning for three years. Explain role of each organism. Create dioramas of ecosystems. Create and maintain living systems containing at least one producer and one consumer. • compare anaerobic to aerobic respiration. Compare amount of energy produced, chemical reactions, factors affecting rates, location of reactions, and types of cells that carry out each. • explore diversity among microoganisms. Research types of aerobic and anaerobic bacteria (e.g., *Stapholoccus aureus, Clostridium botulinum*). Discuss potential impacts on human health (e.g., botulism, vitamin K production). Research and categorize antimicrobial drugs. Investigate how antimicrobial drugs disrupt cell processes and/or structures. Create informational brochures explaining how antimicrobial drugs work and distribute at drugstores. • investigate dietary disorders (e.g., anorexia, malnutrition, bulimia) or dietary choices (e.g., vegetarian, diabetic, fad). Identify their effects on cells and organ systems. Write informational brochures for people suffering from these diseases or considering these dietary choices. Interview local healthcare professionals to determine nutritional problems in communities. Create action plans to solve problems and present to health classes. • investigate structure and function of enzymes. Create physical models to illustrate action of enzymes. Investigate how factors, such as temperature, pH, and substrate concentration affect enzyme activity. Use models to illustrate findings. • explore how toxins interfere with chemical reactions in humans. Investigate milk sickness and its historical importance. Read "Land of Milk and Poison" and discuss how medical detectives solved the mystery of milk sickness. Write short stories about how doctors and other healthcare workers solve mysteries of other diseases. • research process of fermentation. Investigate uses and misuses of fermentation products. Make bread and create children's books explaining the process (*WP - Transactive*). • create flow charts illustrating path of energy from Sun to humans and from humans to environment. Label	Phyllis does not read at the level of her same-age peers. She should be placed in multi-ability groups for activities that require sustained reading (*Type of extensions: purpose and appropriateness, complexity, motivation).* The teacher is aware that incidences of bulimia and anorexia are significantly higher among intellectually gifted females than among other females. She has assigned clusters of gifted girls to investigate effects of these disorders on cells and organ systems, including their etiologies and treatment. Their activities include meeting with counselors trained in needs of these students for extended discussions related to setting personal goals and dealing with dilemmas of developing talents versus being popular. They will share their presentation with middle school girls selected by gifted and talented specialists *(Types of extensions: purpose and appropriateness, motivation, level of support, resources and materials, environment, demonstration of knowledge).*

charts, identifying major processes involved in each energy transformation.	

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**How do body systems work together to keep me healthy and active?** How does my body maintain homeostasis?	**Students will** **Life Science** • investigate behavioral responses. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use tools, equipment, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • apply scientific inquiry and conceptual understandings to solving problems of technological design. • examine the interaction between science and technology. • explore the impact of science on personal and community health. • analyze the role science plays in everyday life and compare different careers in science. • recognize that scientific knowledge is subject to change. • investigate advances that have effects on science and society. **Medical Science Content Chart** • explain how lungs and kidneys help maintain constant and proper blood pH. • describe acid/base balance of the human body. • compare body fluids and their functions.

Sample Activities	Sample Extensions for Diverse Learners
Students will • investigate fluid and electrolyte balance. Compare percentages and types of body fluids (e.g., intracellular, extracellular, interstitial, plasma). Identify basic concepts of fluid and electrolyte regulation. Investigate hormonal control. Compare symptoms of water excess and water depletion. Investigate water and salt loss in athletes. Compare sports drinks for important electrolytes. Explain why adequate fluid replacement during exercise is important. • investigate three processes carried out by kidneys (e.g., filtration, reabsorption, secretion). Investigate effects of alcohol and drugs (e.g., diuretics, caffeine) on excretory system. Research how aging affects kidney functions. Create physical models of mammalian kidney to illustrate functions. Interview dialysis patients about the procedure and how it affects their lives. • identify types of acids and bases in the body. Explore buffers and buffer systems (e.g., protein, carbonic acid-bicarbonate, phosphate). Recognize that buffer systems provide only temporary solutions. Investigate how pulmonary mechanisms and renal mechanisms work together to maintain acid-base balance. Investigate disturbances of acid-base balance (e.g., emphysema, renal failure, heart failure, hypertension, neural damage). • research how severe diarrhea can affect blood pH, urine pH, and breathing patterns. Create models of human colon to illustrate importance of its structure to control diarrhea. ***Technology suggestions:*** *Use software programs that show three-dimensional views of human anatomy.*	Frank is interested in the effects of exercise on physiological functions, but he understands information presented in concrete manners using simple languages. Frank should receive extra support in strategies to improve his vocabulary development. As motivating tasks, Frank will work with college trainers to observe highly-skilled athletics (*Types of extensions: motivation, resources and materials).* Carole, Dianna, and Jamahl have expressed desires to become medical doctors. To expose them to fields of medical research and medical practice, these students will be matched with medical researchers under whose supervision they will learn to use state of the art research instruments and procedures to investigate topics agreed upon by researcher, student, and teacher. They will interview and shadow doctors in selected specialty areas. Each student will prepare poster board reports of their activities and career preparation, including options in selected fields *(Types of extensions: purpose and appropriateness, environment, level of support, participation, resources and materials, demonstration of knowledge, motivation).*

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**Why do organisms behave the way they do?** How does my environment affect my behavior? What factors determine my marital status and the size of my family?	**Students will** **Life Science** • investigate behavioral responses. • analyze patterns of behavior. **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use tools, equipment, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • recognize how science influences human population growth. • investigate how science can be used to solve environmental quality problems. **Medical Science Content Chart** • identify and analyze human body systems and how their components work together or affect each other. • relate medical terminology to body organs and systems. • apply mathematics, science, and communication skills to technical content.

Sample Activities	Sample Extensions for Diverse Learners
Students will • research studies done on identical twins separated at birth and raised apart. Compare personalities, mannerisms, habits, and interests of twins. Debate nature-versus-nurture controversy. • investigate and compare innate and learned behaviors (e.g., habituation, imprinting, classical and operant conditioning) in graphic organizers. Create multimedia presentations illustrating examples of each. ***Technology suggestion:*** *Use CD-ROMs, digital cameras, computers, video, and audio to create multimedia presentations.* • compare advantages and disadvantages of sexual reproduction and asexual reproduction. Explain adaptive advantages of hermaphroditism, altruistic behavior, and mating systems (e.g., polygamy, polyandry, monogamy). Investigate evolution of behavioral patterns that (e.g., breeding seasons, mating behaviors) affect reproductive success of populations. • explore how growth of the human population is different from that of other species. Investigate how human activities have affected selected factors (e.g., climate, food shortages, accidental injuries, infectious diseases, predators) that control lives and numbers of other animals. Investigate and graph exponential growth of the human population since1500s. Investigate warning signals (e.g., ozone depletion, global warming, air and water pollution, loss of biodiversity) that the human population has reached Earth's carrying capacity for the demands of our species. Investigate factors that govern human reproduction (e.g., social mores, traditional beliefs, economics). Debate the question: Have we reached Earth's carrying capacity for the demands of our species?	

Academic Expectations	Guiding Questions	Correlations to the Program of Studies
Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)	**Why is a knowledge of chemistry and physics necessary in medical careers?** How will participation in student organizations help prepare me for a career in health care?	**Students will** **Scientific Inquiry** • identify and refine questions and identify scientific concepts. • design and conduct different kinds of scientific investigations. • use equipment, tools, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • communicate designs, procedures, and results. • review and analyze scientific investigations. **Applications/Connections** • analyze the role science plays in everyday life and compare different careers in science. • investigate advances that have effects on science and society. **Medical Science Content Chart** • relate importance of chemistry and physics to students studying the health professions and to various body processes. • utilize activities of the Health Occupation Students of America (HOSA) student organization as an integral component of course content and leadership development. • apply mathematics, science, and communication skills to technical content.

Sample Activities	Sample Extensions for Diverse Learners
Students will • develop career notebooks describing educational requirements for health related careers, job opportunities, salaries, opportunities for advancement, and job descriptions. ***Technology suggestion***: *Use career and desktop publishing software to create notebooks*. • design demonstrations to illustrate chemical basis of clinical procedures and tests (e.g., urinalysis, blood sugar, home pregnancy tests, pH of body fluids). • investigate the relationship between pressure and volume. Demonstrate these relationships using medical equipment (e.g., sphygmomanometer, spirometer). Design models to demonstrate breathing process. Record written explanations of processes in learning logs. • participate in local, regional, state, and national Health Occupations Students of America (HOSA) leadership conferences and competitions.	Faith learns best when she can discuss ideas with her peers. She will work in cooperative learning groups when participating in state competitions *(Types of extensions: level of support).*